

CLAIMS

What is claimed is:

- 1 1. A method for providing self-provisioning of VoIP telephony service to a subscriber of
2 the VoIP telephony service, the method comprising the computer-implemented steps
3 of:
4 instructing an un-provisioned residential gateway that is associated with the
5 subscriber to collect a subscriber numeric identity that uniquely identifies the
6 subscriber;
7 instructing the residential gateway to collect a Personal Identification Number (PIN)
8 information that is associated with the subscriber;
9 receiving and verifying the subscriber numeric identity and Personal Identification
10 Number (PIN) information;
11 assigning an IP address that is associated with one or more Media Gateway Control
12 Protocol (MGCP) messages that are sent by the residential gateway as a
13 residential gateway IP address for the residential gateway; and
14 using the residential gateway IP address to provision the residential gateway that is
15 associated with the subscriber.
- 1 2. The method as recited in Claim 1, further comprising the step of verifying using an
2 authentication database wherein the authentication database stores the subscriber
3 numeric identity and PIN information.

1 3. The method as recited in Claim 1, wherein the subscriber numeric identity is an E.164
2 address.

1 4. The method as recited in Claim 1, further comprising the step of:
2 receiving a first notify command from the residential gateway, wherein the first notify
3 command is sent in response to a telephone receiver connected to the
4 residential gateway going off-hook; and
5 instructing the residential gateway to collect a provisioning access number.

1 5. The method as recited in Claim 4, wherein instructing the residential gateway to
2 collect a provisioning access number further comprises sending a MGCP notification
3 request with a first digit map associated with the provisioning access number.

6. The method as recited in Claim 1, further comprising the steps of:
receiving and storing a provisioning access number from the residential gateway; and
instructing the residential gateway to create a first VoIP connection between the
residential gateway and an announcement server for sending a first VoIP
message from the announcement server to the subscriber via the residential
gateway in order to collect the subscriber numeric identity.

1 7. The method as recited in Claim 6, further comprising the step of:
2 receiving and storing the subscriber numeric identity from the residential gateway;
3 and
4 instructing the residential gateway to delete the first VoIP connection.

1 8. The method as recited in Claim 1, further comprising the step of:
2 after the residential gateway deletes a first VoIP connection, instructing the residential
3 gateway to create a second VoIP connection between the residential gateway
4 and an announcement server for sending a second VoIP message from the
5 announcement server to the subscriber via the residential gateway in order to
6 collect the Personal Identification Number (PIN) information from the
7 subscriber.

1 9. The method as recited in Claim 8, further comprising the step of:
2 receiving and storing the Personal Identification Number (PIN) information; and
3 instructing the residential gateway to delete the second VoIP connection.

1 10. The method as recited in Claim 6, wherein the announcement server is a separate
2 process from a self-provisioning system call agent of a self-provisioning system that
3 is associated with a provider of the VoIP telephony service.

1 11. The method as recited in Claim 1, wherein the step of instructing a residential
2 gateway to collect a subscriber numeric identity is performed by a self-provisioning
3 system call agent of a self-provisioning system that is associated with a provider of
4 the VoIP telephony service.

1 12. The method as recited in Claim 11, wherein the self-provisioning system call agent
 2 uses a Media Gateway Control Protocol (MGCP) notification request command for
 3 instructing the residential gateway to collect the subscriber numeric identity.

1 13. The method as recited in Claim 1, wherein the step of instructing the residential
 2 gateway to collect a Personal Identification Number (PIN) information is performed
 3 by a self-provisioning system call agent of a self-provisioning system that is
 4 associated with a provider of the VoIP telephony service.

1 14. The method as recited in Claim 13, wherein the self-provisioning system call agent
 2 uses a Media Gateway Control Protocol (MGCP) notification request command for
 3 instructing the residential gateway to collect the Personal Identification Number (PIN)
 4 information.

1 15. The method as recited in Claim 1, wherein the step of verifying the subscriber
 2 numeric identity and PIN information is performed by a self-provisioning system call
 3 agent of a self-provisioning system that is associated with a provider of the VoIP
 4 telephony service.

1 16. The method as recited in Claim 1, wherein the step of using a source IP address that is
 2 associated with Media Gateway Control Protocol (MGCP) messages that are sent by
 3 the residential gateway as a residential gateway IP address for the residential gateway
 4 is performed by a self-provisioning system call agent of a self-provisioning system
 5 that is associated with a provider of the VoIP telephony service.

1 17. The method as recited in Claim 1, wherein the step of using the residential gateway IP
2 address to provision the residential gateway that is associated with the subscriber is
3 performed by a self-provisioning system call agent of a self-provisioning system that
4 is associated with a provider of the VoIP telephony service.

1 18. The method as recited in Claim 1, wherein the step of using the residential gateway IP
2 address to provision the residential gateway further comprises the step of querying a
3 Dynamic Host Configuration Protocol (DHCP) server for a mapping from the
4 residential gateway IP address to a MAC address associated with the residential
5 gateway and receiving a permanent IP address in response.

1 19. The method as recited in Claim 1, wherein the step of using the residential gateway IP
2 address to provision the residential gateway further comprises the step of configuring
3 a Dynamic Host Configuration Protocol (DHCP) server to offer a long-term IP
4 address to the residential gateway.

1 20. The method as recited in Claim 1, wherein the step of using the residential gateway IP
2 address to provision the residential gateway further comprises the step of configuring
3 a Dynamic Host Configuration Protocol (DHCP) server to associate a Domain Name
4 System (DNS) hostname that is based on the subscriber numeric identity with a MAC
5 address of the residential gateway.

1 21. The method as recited in Claim 1, wherein the step of using the residential gateway IP
2 address to provision the residential gateway further comprises the step of rebooting
3 the residential gateway remotely by a self-provisioning system call agent of a self-
4 provisioning system that is associated with a provider of the VoIP telephony service.

1 22. The method as recited in Claim 1, wherein the residential gateway requests a location
2 of one or more Domain Name System (DNS) server, a limited-access IP address, and
3 a Media Gateway Control Protocol (MGCP) endpoint name of a self-provisioning
4 system call agent of a self-provisioning system that is associated with the provider of
5 the VoIP telephony service.

1 23. The method as recited in Claim 1, further comprising using a subscriber registration
2 center that is associated with a provider of the VoIP telephony service wherein the
3 subscriber registration center performs the steps of:
4 offering to the residential gateway a limited access IP address;
5 offering to the residential gateway a location of one or more Domain Name System
6 (DNS) servers;
7 offering to the residential gateway a Media Gateway Control Protocol (MGCP)
8 endpoint name of a self-provisioning system call agent of a self-provisioning
9 system that is associated with the provider of the VoIP telephony service.

1 24. The method as recited in Claim 23, wherein the step of offering to the residential
2 gateway a limited access IP address is performed through a Dynamic Host
3 Configuration Protocol (DHCP) server.

1 25. The method as recited in Claim 23, wherein the step of offering to the residential
2 gateway a location of one or more Domain Name System (DNS) servers is performed
3 through a Dynamic Host Configuration Protocol (DHCP) server.

1 26. The method as recited in Claim 23, wherein the step of offering to the residential
2 gateway a Media Gateway Control Protocol (MGCP) endpoint name of a self-
3 provisioning system call agent of a self-provisioning system that is associated with the
4 provider of the VoIP telephony service is performed through a Dynamic Host
5 Configuration Protocol (DHCP) server.

1 27. The method as recited in Claim 23, wherein the protocol server directs a provisioned
2 residential gateway to a standard call agent that is associated with the provider of the
3 VoIP telephony service to enable VoIP calls and services.

1 28. A method for providing self-provisioning of VoIP telephony to a subscriber of a VoIP
2 telephony service, the method comprising the computer-implemented steps of:
3 receiving a first notify command from a residential gateway that is associated with the
4 subscriber and that has not been provisioned, wherein the first notify
5 command is sent in response to a lifting of a telephone receiver connected to
6 the residential gateway;
7 after receiving the first notify command from the residential gateway, instructing the
8 residential gateway to collect a provisioning access number;

9 receiving a second notify command from the residential gateway, wherein the second
10 notify command is sent with the provisioning access number;
11 receiving and storing the provisioning access number;
12 after receiving the second notify command, instructing the residential gateway to
13 create a first VoIP connection between the residential gateway and an
14 announcement server for sending a first VoIP message from the announcement
15 server to the subscriber in order to collect a subscriber numeric identity that
16 uniquely identifies the subscriber;
17 instructing the residential gateway to collect the subscriber numeric identity that is
18 allocated to the subscriber;
19 receiving a third notify command from the residential gateway, wherein the third
20 notify command is sent with the subscriber numeric identity;
21 receiving and storing the subscriber numeric identity;
22 after receiving the third notify command from the residential gateway, instructing the
23 residential gateway to delete the first VoIP connection;
24 after the residential gateway deletes the first VoIP connection, instructing the
25 residential gateway to create a second VoIP connection between the residential
26 gateway and the announcement server for sending a second VoIP message
27 from the announcement server to the subscriber in order to collect a Personal
28 Identification Number (PIN) information from the subscriber;
29 instructing the residential gateway to collect the Personal Identification Number (PIN)
30 information that is associated with the subscriber;

receiving a fourth notify command from the residential gateway, wherein the fourth notify command is sent with the Personal Identification Number (PIN) information;

receiving and storing the Personal Identification Number (PIN) information;

after receiving the fourth notify command from the residential gateway, instructing the residential gateway to delete the second VoIP connection;

verifying the subscriber numeric identity and PIN information;

using a source IP address that is associated with one or more Media Gateway Control Protocol (MGCP) messages that are sent by the residential gateway as a residential gateway IP address for the residential gateway; and

using the residential gateway IP address to provision the residential by performing the steps of:

enabling a Dynamic Host Configuration Protocol-centric (DHCP-centric) protocol server to query a Dynamic Host Configuration Protocol (DHCP) server for a mapping from the residential gateway IP address to a MAC address associated with the residential gateway;

enabling the DHCP-centric protocol server to configure the DHCP server to offer a long-term IP address to the residential gateway; and

enabling the DHCP-centric protocol server to configure the DHCP server to associate a Domain Name System (DNS) hostname that is based on the subscriber numeric identity with the MAC address of the residential gateway.

- 1 29. A computer-readable medium carrying one or more sequences of instructions for
2 providing self-provisioning of VoIP telephony to a subscriber of VoIP telephony
3 service, which instructions, when executed by one or more processors, cause the one
4 or more processors to carry out the steps of:
5 instructing an un-provisioned residential gateway that is associated with the
6 subscriber to collect an subscriber numeric identity that uniquely identifies the
7 subscriber;
8 instructing the residential gateway to collect a Personal Identification Number (PIN)
9 information that is associated with the subscriber;
10 receiving and verifying the subscriber numeric identity and Personal Identification
11 Number (PIN) information;
12 assigning an IP address that is associated with one or more Media Gateway Control
13 Protocol (MGCP) messages that are sent by the residential gateway as a
14 residential gateway IP address for the residential gateway; and
15 using the residential gateway IP address to provision the residential gateway that is
16 associated with the subscriber.
- 1 30. An apparatus for providing self-provisioning of VoIP telephony to a subscriber of a
2 VoIP telephony service, which apparatus, comprising:
3 means for instructing an un-provisioned residential gateway that is associated with the
4 subscriber to collect an subscriber numeric identity that uniquely identifies the
5 subscriber;
6 means for instructing the residential gateway to collect a Personal Identification
7 Number (PIN) information that is associated with the subscriber;

8 means for receiving and verifying the subscriber numeric identity and Personal
 9 Identification Number (PIN) information;
 10 means for assigning an IP address that is associated with one or more Media Gateway
 11 Control Protocol (MGCP) messages that are sent by the residential gateway as
 12 a residential gateway IP address for the residential gateway; and
 13 means for using the residential gateway IP address to provision the residential
 14 gateway that is associated with the subscriber.

1 31. An apparatus for providing self-provisioning of VoIP telephony to a subscriber of a
 2 VoIP telephony service, which apparatus, comprising:
 3 a network interface that is coupled to the data network for receiving one or more
 4 packet flows therefrom;
 5 a processor;
 6 one or more stored sequences of instructions which, when executed by the processor,
 7 cause the processor to carry out the steps of:
 8 instructing an un-provisioned residential gateway that is associated with the
 9 subscriber to collect a subscriber numeric identity of the subscriber;
 10 instructing the residential gateway to collect a Personal Identification Number (PIN)
 11 information that is associated with the subscriber;
 12 receiving and verifying the subscriber numeric identity and Personal Identification
 13 Number (PIN) information;
 14 assigning an IP address that is associated with one or more Media Gateway Control
 15 Protocol (MGCP) messages that are sent by the residential gateway as a
 16 residential gateway IP address for the residential gateway; and

17 using the residential gateway IP address to provision the residential gateway that is
18 associated with the subscriber.

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